reMarks

Product Newsletter of Mark of the Unicorn Inc.

Number 3, Summer 1991

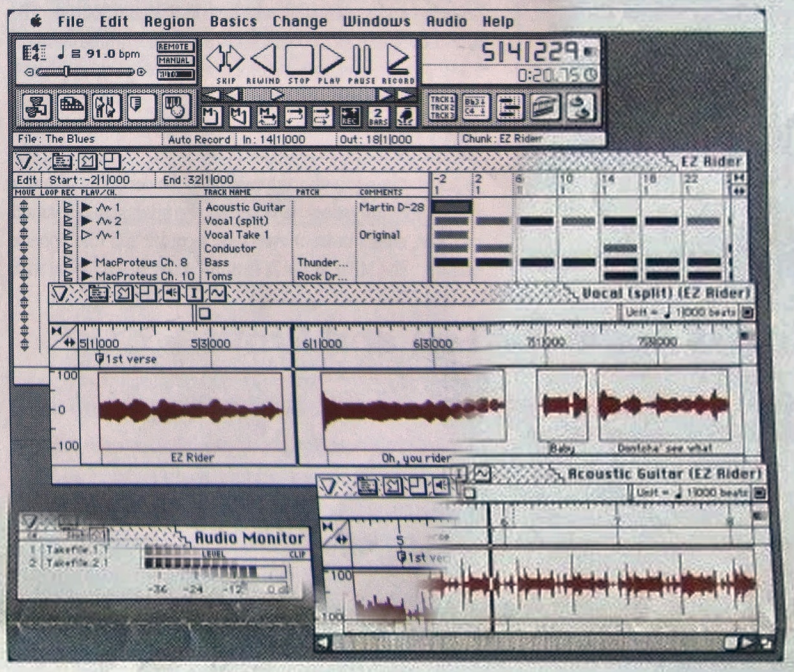
Digital Performer — A Random Access Revolution

Inspiration strikes! You quickly sequence in a killer drum groove and rockin' piano part. Then you set up a microphone, plug it into your Macintosh and tear off a lead vocal track that makes Ray Charles drop his Diet Pepsi! No it's not a dream, it's Digital Performer® in action.

Digital Performer creates a new frontier for desktop music production by integrating MIDI sequencing and digital audio recording. Digital Performer allows you to simultaneously record and playback multiple tracks of digital audio and MIDI in an integrated, creative environment. Digital Performer's award-winning sequencer design, combined with random access digital audio provide unprecedented flexibility and control over the music that you make.

Digital Performer allows you to record professional, CD-quality digital audio and sequence MIDI instruments. Digital Performer lets you add guitar solos to your sequences. Create music for advertisements and record the voice-over all with your Macintosh. For many projects, Digital Performer eliminates the need to synchronize to a tape recorder.

In developing Digital Performer, we have integrated audio and MIDI features in a way that complements Performer's unique user interface—and accommodates those of you who are already familiar with Performer. In fact, because of the random access capabilities, many features in Digital Performer work on audio data in exactly the same way as MIDI data. Parcels of audio data (called *soundbites*) can be cut, copied, and pasted in exactly the same fashion as MIDI note data. Wherever possible, Digital Performer uses identical displays and commands for both audio and MIDI recording and editing. This creates a seamless environment for creative work.



Digital Performer currently supports the Digidesign Sound Accelerator and Audiomedia hard disk recording systems, which provide two channels for recording and playback and Pro Tools which offers 4-16 track capability. Digital Performer will easily accommodate future developments in digital multitracking systems.

Working with Digital Performer

Digital Performer records audio in much the same way as a multitrack tape system, but with increased flexibility. You can record an unlimited number of audio tracks with playback dynamically allocated to the available tracks of your hardware. Digital Performer gives you unprecedented flexibility for editing, rearranging, and mixing the audio with your MIDI tracks.

Continued on page 3

Performer Wins MACWORLD Award

Add "Best Sequencer, 1991" to Performer's 3 TEC awards!

Performer has been honored once again by being awarded the 1991 World Class Award by MACWORLD magazine. The prestigious World Class Awards recognize the best Mac hardware, software, and peripherals according to the industry's most qualified experts—the people who use them. "These are the only awards in the Macintosh industry selected by users of Macintosh computers. They represent the loyalty and enthusiasm of users and their belief in these products as the best," said Macworld Editor-in-Chief Jerry Borell. "The developers who win are those whose products prove most useful to the end-users and buyers of Macintosh technology" said Jim Martin, President/CEO of Macworld Communications, Inc.

The World Class Award recognizes Performer's continued acceptance as the leader for music sequencing in the Macintosh community. This award follows Performer's unprecedented three TEC awards presented by *MIX* magazine. In September, 1990, Performer won the 1990 TEC Award for technical excellence and creativity. Performer won this same award in 1989 and 1987.

We would like to thank all of our users for your support and ideas. We truly appreciate the enthusiasm you have shown by voting for Performer in these awards. These honors are as much yours as the designers, programmers and staff of Mark of the Unicorn. We proudly accept these awards on your behalf.

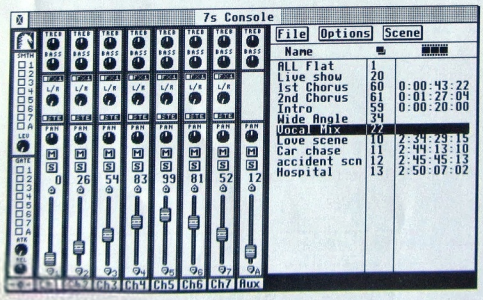
Performer has captured the 1991 World Class Award for Best Sequencer on the Macintosh

Digital Performer

ATARI and IBM MIDI Mixer 7s Software Announced

The Super Stereo Line mixer reaches new platforms

We are pleased to announce that the Console 7s application which provides complete control of the MIDI Mixer 7s is now shipping for the Atari ST and IBM PC and compatibles. The 1.1.1 update of the Macintosh version of 7s Console is also now ready. All versions are available free of charge to all registered MIDI Mixer 7s users. The Atari, IBM and Macintosh console software are now bundled together with the MIDI Mixer 7s.



The 7s Console looks and operates like a standard mixing console giving you access to all of the MIDI Mixer 7s features directly from your computer. The Atari and IBM version's on-screen sliders and knobs animate in response to incoming MIDI data. You can even trigger automated mixdown scenes while referenced to MIDI Time Code.

The Atari 7s Console runs either as an application or desk accessory and is compatible with both M-ROS and Softlink. The software requires an ST computer with a monochrome monitor. The IBM version requires a VGA or EGA video display, a Microsoft compatible mouse and a MIDI interface.

The MIDI Mixer 7s is Mark of the Unicorn's MIDI-controlled line mixer that brings audio automation to the desktop studio at a remarkably low price. It is perfect for mixing stereo sound modules, effects units or even tape recorder and microphone outputs. The MIDI Mixer 7s features seven stereo inputs with bass, treble, pan and two stereo effects sends on each channel. In addition, the unit has stereo auxiliary inputs and outputs and eight stereo noise gates.

The unit is operated via MIDI controller messages to give users the ability to control and automate mixes of audio sources from *any* MIDI sequencer or controller. Multiple units can be "stacked" to provide additional stereo input channels. Included on the Mac 7s console software disk is a custom template of Performer sliders to control the MIDI Mixer 7s directly from a Performer track. The Atari disk includes slider templates for C-Lab's Notator and Steinberg's Cubase sequencers for the ST.

The single-space, nineteen inch rack-mount unit includes seven stereo line inputs, stereo chain input and output, master outputs, stereo auxiliary inputs and outputs, two stereo effects sends and returns, headphone output, and MIDI In and Thru.

Random Access Audio for Fun and Profit

How the Tapeless studio helps make ultra-clean recordings with no waxy build-up!

Digital Performer is designed around digital audio recording systems such as Digidesign's Sound Tools that record directly onto the hard disk of your computer. These systems are an important advance in functionality over digital systems that record onto tape such as a DAT or F1 format recorder. These new direct-to-disk systems give you Random Access to any portion of your recording.

Random Access Playback

Tape cannot easily provide fast, random access playback because as you record, the tape winds forward in a linear fashion. To get to a section in the middle of the tape, you must rewind or fast forward the tape to the correct position. This takes time and forces you to stop playback while searching.

However, with a hard disk, the read head of the disk drive can access any position on the disk very quickly, much faster than the ear can hear. This allows you to select any portions of the recorded information to be played back in any order seamlessly, without any drop-out in signal or wait between sections.

When using this random access capability, you can record a long passage, say two verses and two choruses, and then either play back the entire recording, or, create smaller regions of this recording, anything from a single word or drum hit to any measure to one of the choruses. You can create as many of these "regions" as you wish and then play them back in any order, *all without affecting the original recording at all!* This random access method of playback brings the same flexibility to audio tracks that MIDI sequencers brought to virtual MIDI tracks.

Digital Audio

When digitally recording audio, you are in effect reducing the actual audio waveforms to a stream of numbers. A digital recorder reduces the audio signal to a formula of amplitude over time. There are two terms that are important to understand when dealing with digital audio recorders, "sampling rate" and "amplitude resolution".

Amplitude is how loud the signal is at any given time. Professional Digital Audio recorders often use an amplitude resolution of "16 Bits" or 65,536 individual steps. This means that at any instant, the amplitude of the audio source can be recorded with a range of possible values from 0 to 65,535.

The sampling rate determines how many "snapshots" of the amplitude level are taken every second. The professional standard of 44.1Khz sampling rate means that 44,100 recordings of the amplitude level are made every second. To make accurate digital recordings, you need to have a sampling rate that is at least twice the frequency of the highest pitch you wish to record.

The sampling rate determines the highest frequency that can be recorded. The amplitude resolution determines the dynamic range. Together, the 16 bit resolution and 44.1Khz sampling rate give the necessary fidelity and detail to accurately reproduce sound. These are the standards used for CD quality digital audio. For more information about digital audio, we suggest the following books:

- *Principals of Digital Audio* – by Ken Pohlmann
- *The Recording Studio Handbook* – by John Woram
- *Digital Audio Engineering* – edited by John Strawn

On-Line Helpful Hints

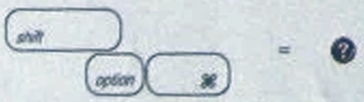
Performer's comprehensive On-Line Help provides quick access to on-screen explanations of each feature in the program. On-Line help can be a life-saver during an important session and can help minimize frustration by providing fast answers and information about Performer's features without interrupting your work.

Performer™ Help

You can get help on any item in Performer, including menu items, grayed out (unavailable) menu items, mini-menus, windows, and buttons by clicking the item with Performer's Help cursor.

The Help information in Performer is stored separately in a special file called the *Performer Help* file. When you install Performer you must also install the Performer Help file in order to be able to get help when running Performer.

Once you have installed the Performer Help file and you are running Performer, you can get help on anything on Performer's screen with the Help cursor. To turn the arrow cursor into Performer's Help cursor, hold down the *command*, *option*, and *shift* keys together. When you release the keys, the cursor will turn back into an arrow. On extended keyboards, you can also activate the Help cursor by pressing the Help key.



To get help on something, just click it with the Help cursor. If it's a menu item, select it from the menu with the Help cursor. When you release the mouse button, a help window will appear that briefly explains the item. To make the help window disappear, click anywhere. All major features in Performer have a help item as well as most smaller features.

Performer's Help menu contains two selections: *About Help* and *Show Balloons*.

- Choosing *About Help* opens a Help window that describes in detail how to use the On-line Help feature.
- Choosing *Show Balloons* makes the arrow cursor turn into the Help cursor without holding down any keys. This is convenient when you would like to browse several features. In Show Balloons mode, any item that you click on or select from a menu will open a help window. Pressing the help key is the same as choosing Show Balloons.

In Show Balloons mode, you can temporarily turn the cursor back into the arrow by holding down the *command-option-shift* key combination. To permanently turn the cursor back into the arrow, choose *Hide Balloons* from the Help menu or press the Help key again.

Digital Performer Continued from page 1

A sampling of the new features.

Recording with Digital Performer produces approximately 5 Megabytes of data per minute of monophonic audio (10 megabytes per minute of stereo). Digital Performer generates 16-bit, 44.1 kHz, mono Sound Designer II files and can load and play back files in Sound Designer, Sound Designer II (Mono and Stereo) and Audio IFF formats.

Soundbites and Soundfiles

A "soundfile" is a file on the hard disk that contains audio data. A "soundbite" is a *region* within a soundfile or a portion of the soundfile. For example, a soundfile could consist of a recording of an entire song. A region might be a two bar phrase from the second chorus in the middle of the soundfile.

Soundbites (regions) exist within a soundfile. A soundbite is any portion of a soundfile. It can even be the entire soundfile. Soundbites are called "regions" in a Sound Designer II file. For example, a Sound Designer II file has a region list, from which you can build playlists.

A Soundbite is just a pointer to a section of a soundfile, not the actual data itself. This allows you to make edits and changes to a specific Soundbite without affecting the original data. If you trim or delete a Soundbite, you are only changing pointers that indicate how to play a portion of a sound file. This is called "Non-Destructive Editing" as it does not damage the original recording in any way.

Soundbites are edited in the same way as MIDI note data. In addition to pop-editing attack time and velocity in the Event List and Graphic Editing windows, Soundbites can be edited by most of Performer's region editing commands that apply to MIDI note data. These commands include all Edit menu commands (Undo/Redo, Cut, Copy, Paste, Erase, Repeat, Merge, Snip, Splice, Shift, and Select All). Quantize, Smart Quantize, Deflam, Change Velocity, and Reverse Time also affect soundbite.

The Soundbites Window

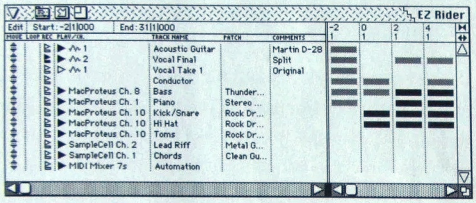
As you work with Digital Performer, you'll create many soundbites. The soundbites window helps you manage them. Think of this window as your "catalog" of audio data. It lists all of the portions of audio that you are working with in the file.

The Soundbites Window shows the exact duration, sampling rate, bits and number of channels for each soundbite, as well as the soundfile from which the soundbite was created. You can sort this list by name, soundfile and size. Digital Performer's Audible Mode allows you to audition any soundbite directly from this window.

Audio Tracks

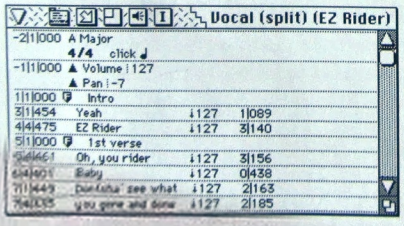
Digital audio soundbites are recorded into Audio Tracks. In almost every way, these tracks function in the same way as Performer's standard tracks which contain MIDI data. You can assign an Audio Tracks playback channel assignment and set it's record and play enable status. Performer supports an unlimited number of Audio tracks (within RAM) with playback dynamically allocated among the available hardware channels

Soundbite events can be viewed and edited in the tracks Overview section just like MIDI data. This window is perfect for arranging sections of your music or changing the form of a composition.



Event Editing for Audio Soundbites

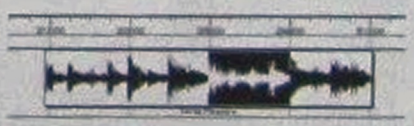
Digital Performer has two event editing windows for more detailed editing of soundbites; Event List and Graphic.



The Event List window provides a playlist style view of the different soundbites as they appear over time. You can pop-edit placement and volume like a standard MIDI event.

The Graphic Editing window actually shows you a picture of the waveform that makes up the Soundbite. You can freely move soundbites by dragging their picture forwards or backwards in time. The Graphic Editing window includes a continuous data grid for pan and volume events. This window also allows selection of soundbites for more sophisticated editing such as Split, Trim and Strip Silence. To select a soundbite, double-click on it. It will highlight and an editing box will appear around it.

After a soundbite is selected, you may highlight any region within it to modify it's length with the Trim or Split commands.



Zoom

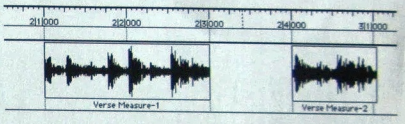
The Time Zoom buttons to the left of the Time Ruler expand and contract time to give you a more global or detailed view of the waveform.

The Verse Measure soundbite zoomed out.

The Verse Measure soundbite zoomed in.

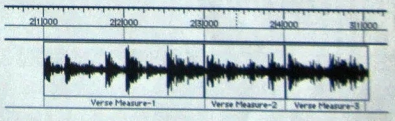
Trim

The Trim command allows you to select any region of a soundbite and "trim" off the rest of the soundbite. This creates a new soundbite from the original soundfile that is only the portion you selected.



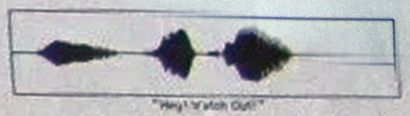
Split

This is similar to trim however instead of removing the unhighlighted section from the track, it splits the soundbite into multiple soundbites.



Strip Silence

Strip Silence breaks up a soundbite into several smaller soundbites by removing all of the portions that consist of silence. For example, the following soundbite consists of the spoken phrase "Hey! Watch out!":



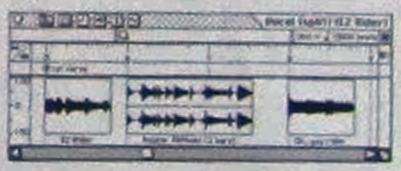
You could use Strip Silence to remove the silence from between the words and create three separate soundbites:

Volume and Pan for Audio Tracks

Volume and pan events can be created for audio tracks. You can view and edit volume and pan events in both the Graphic and Event List editing windows.

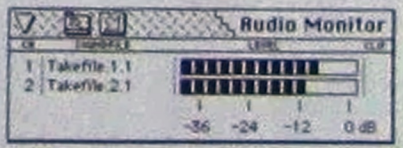
Mono and Stereo Soundbites

Any audio track in Digital Performer can have both Mono and Stereo soundbites. This allows maximum flexibility in handling your digital audio playback assignment.



The Audio Monitor Window

The Audio Monitor Window shows the level of Digital Audio playback. The window also doubles as an input monitor for recording new digital audio tracks.



Digital Performer Features

- Unlimited number of Audio Tracks
- Digital Audio Event List window
- Digital Audio Graphic Editing window
- Soundbites window
- Audio Monitor
- Stereo and Mono Soundbites
- Non-Destructive Editing
- Split
- Trim
- Strip Silence
- Re-load
- Compact

System 7

Performer version 3.61 and Professional Composer are compatible with Apple's new System 7. The MTP, VTP DA's and MIDI Mixer 7s Console are also all System 7 ready.

Please note that if you are running the MTP DA under System 7, you will get a dialog box that asks: "Is the application MTP set to send and receive MIDI?". Answer "No" to this question so the MTP will install it's MIDI driver and you will be able to use the DA.

Digital Performer 101: Questions and Answers

Everything you always wanted to know about Digital Performer!

What Hardware do I need?

First, you need a Macintosh SE/30, II, IIx, IIfx, IIci, or IIsi. As of this printing, you can use either the Pro Tools, Sound Tools or Audiomedia systems from Digidesign. You can use any of the Digidesign audio converters such as the AD/IN, DAT I/O, or PROI/O. Support for other systems will be available in the future. You will also need a large hard disk, 10 megabytes for every minute of stereo digital audio you wish to record.

How many tracks can I record?

Digital Performer supports an unlimited number of digital audio tracks. It is important to note however that the hardware you use to play back the digital audio will present a limitation. The Digidesign Sound Tools and Audiomedia cards support 2 tracks with upgrades to the Pro Tools multi-track systems coming soon. Digital Performer will support more advanced multi-track systems as they become available.

How do I get Digital Performer?

You may purchase the program from any authorized Mark of the Unicorn, Inc. dealer. Registered users of Performer may upgrade directly from Mark of the Unicorn.

What Is a "Soundbite"?

In Digital Performer, a set of pointers to a region in a soundfile—the start of the region and the end of it—is called a *soundbite*. In a Sound Designer II file, it is called a *region*. In Digital Performer, we call these regions *soundbites* because the word *region* means something entirely different in Performer: it is a period of time within one or more tracks over which an editing command will take effect. Therefore, to avoid confusion with the word *region*, we use the term *soundbite* to describe a Sound Designer II file region. They are one and the same.

How Do I Record in Stereo?

Simultaneously record two mono channels and then pan them hard left and right for playback.

What is Non-Destructive Editing?

Almost every operation in Digital Performer that affects audio data is *non-destructive*, which means that it never alters the audio data that has been recorded onto the hard disk. Instead, when you cut, copy, paste, or use other similar editing commands in Digital Performer, you are actually editing *pointers* to the original audio data. A pointer is a reference in Digital Performer to a specific location in a soundfile. The soundfile itself is not altered.

Non-destructive editing provides immense power and flexibility when handling large audio data files (soundfiles). You can copy and duplicate regions in the soundfile from Digital Performer, but in fact, you are only creating pointers to the original data, which take up virtually no memory or disk space.

What If I Want To Do Destructive Editing?

Destructive editing operations include things like reversing the audio, setting fades, normalizing, changing gain, etc. These operations can be done within Sound Designer II. Digital Performer's "Edit in Sound Designer II" command provides a convenient way to quickly switch into Sound Designer II to perform destructive editing on a soundbite you have created in Digital Performer.

Can I record a CD into Digital Performer, and then view the music in the Notation Editing window?

This is a very good idea. Unfortunately, the technology to analyze the waveforms, separate the sound out into different instruments, do pitch-to MIDI conversion so it can be displayed as Notation or Graphic editing events, and do it all fast enough to be usable is still years away. Anyone with good insights on how to accomplish this should send us their resume!

MTP for IBM

The Orange and Black meet Big Blue.

The Multi-cable freedom of the MIDI Time Piece will soon be available for IBM and compatible computers. The IBM version of the MIDI Time Piece will include an 8-bit card that adds an RS-422 serial port to the computer, allowing you to hook up two MIDI Time Pieces for 256 channels from your PC! By using multiple cards and 4 MTPs you can access a full 512 channel MTP network.

The IBM MTP will work with any standard IBM or Compatible including portables. Complete configuration software to handle routing, SMPTE Synchronization and data filtering will be shipped with the unit.

Cakewalk Professional, the award winning sequencing software by TwelveTone Systems will fully support the IBM MTP. Other IBM software will be adding MTP compatibility in the near future. Developers interested in supporting the IBM MTP or any of our products can contact us for free technical and system exclusive information.

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